Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
for
Mt. Greylock Regional High School

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

? Inventory land uses within the recharge areas of all public water supply sources;

? Assess the susceptibility of drinking water sources to contamination from these land uses; and

? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared
December 31, 2003

Table 1: Public Water System (PWS) Information

PWS Name	**Mt. Greylock Regional High School**
PWS Address	**1781 Cold Spring Road**
City/Town	**Williamstown, Massachusetts**
PWS ID Number	**1341010**
Local Contact	**Ms. Martha P. Mellor**
Phone Number	**413-458-9582 x151**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1341010-01G	175	471	High
Well #2	1341010-02G	175	471	High

Introduction

We are all concerned about the quality of the water we drink. Drinking water sources may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

Description of the Water System

The Mt. Greylock Regional High School (the school) is located in the south central section of Williamstown, Massachusetts. Williamstown is a small rural town in the northwestern corner of Massachusetts along the Vermont and New York borders. The facility consists of two major school wings located adjacent to each other serving seventh through twelfth grade; the wings are attached to each other. The total school

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

student and staff population is approximately 850 people per day. Although there is a municipal water system and a wastewater treatment facility in Williamstown only the municipal sewer serves this area of town. Therefore, the school and surrounding facilities are served by on-site water supplies.

The school is served by two potable supply wells: Well #1 – 01G and Well #2 - 02G. Both well casings terminated below grade within pits and Wells #1 and #2 are 8-inch diameter bedrock wells, 180-feet and 187-feet deep, respectively. Well #2 is located approximately 30 feet south of the school boiler room and Well #1 is located approximately 15 feet north of the school gymnasium. At the time of the assessment, the bulkheads were not secured. According to the previous reports from the school, at the time of installation, the estimated yield of the wells was 35 gpm. Normally, Well #2 supplies water to the school and cafeteria and Well #1 supplies water to the gymnasium. Either well could supply water to the entire school, however the two systems normally operate separately; valves would have to be opened to redistribute water through the system.

The Zone I is the area immediately around the wellhead where only activities associated with supplying water or other non-threatening activities are allowed to occur. The Interim Wellhead Protection Area (IWPA) is a larger area that potentially contributes water to the well. The IWPA is only an interim protection area until an actual Zone II contribution area is delineated; the actual area of contribution to the wellhead may be larger or smaller then the IWPA. The wells have a Zone I protective radius of 175 feet and an IWPA protective radius of 471 feet. These protective radii were based on metered water use at the school. Please refer to the attached map that shows the Zone I and IWPA.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Sources of Contaminants	Zone I	IWPA	Threat	Comments
Non-conforming Zone I	-	-	-	Contact DEP prior to conducting any work in the Zone I or expanding the system/facility.
Fuel Oil Storage	01G	Both	High	There are three USTs w/leak detection within the Zone I of Well #2.
Athletic fields	02G	Both	Moderate	Prohibit the use of pesticides/fertilizers on school fields in Zone Is. Utilize an IPM for athletic fields.
School (Middle and High Schools)	Both	Both	Moderate	Limit road deicing usage, use BMPs for hazardous materials and monitor parking areas and control stormwater.
Hazardous materials	02G	Both	High	Use BMPs for maintenance hazardous materials and laboratory materials
Transformers	02G	Both	Low	Monitor transformers for potential leaks

-For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.

Glossary

Zone I: The area closest to a well; a 100 to 400-foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

The school is located just south of Phelps Knoll summit in an upland area west of the Green River valley. Geologic mapping indicates relatively thin (<50 feet) sand and gravel deposits in the vicinity of the school's wells. Well logs from adjacent facilities on Phelps Knoll indicate thin till overburden deposits over bedrock. The sand and gravel deposits in the vicinity of the school are stratified drift (sand and gravel) deposited during the recession of the glaciers some 18,000 years ago. The bedrock geology in this area is a complex series of folds and faults associated with the Taconic-Berkshire Zone. The bedrock in the immediate area of the school is mapped as carbonates (dolomite/marble) of the Stockbridge Formation.

There is no evidence of a continuous, protective confining layer such as thick clay or till in the vicinity of the wells. Wells drilled in these conditions are considered highly vulnerable to potential contamination from activities on the ground surface because there is no significant hydrogeologic barrier, such as clay, to prevent surface contamination from migrating into the aquifer. The water from the wells is not treated prior to distribution. Water suppliers are required to regularly monitor the quality of the water. You may request additional information regarding the current water quality from the local contact listed in Table 1.

Please refer to the following section, attached maps of the Zone I and IWPA and Table 2 for additional assessment information.

2. Discussion of Land Uses in the Protection Areas

During the assessment, several land uses and activities were identified within the drinking water supply protection areas and in close proximity to the protection areas that are potential sources of contamination.

Key issues include:

1. **Non-conforming Zone I;**
2. **Underground storage tanks;**
3. **School facilities and athletic fields;**
4. **Transportation corridors/parking; and**
5. **Hazardous materials.**

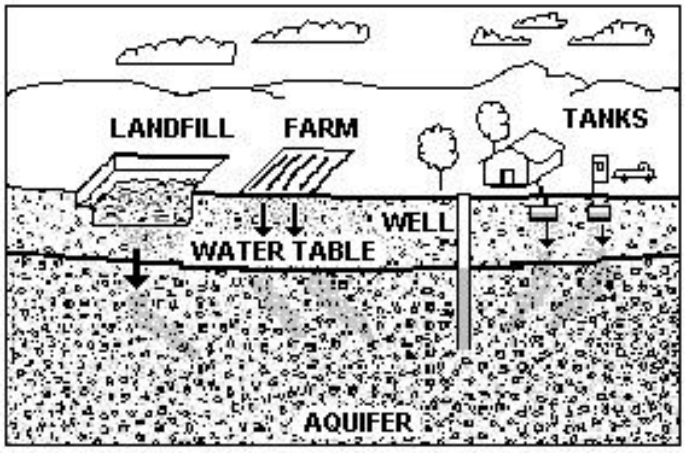

Figure 1: Example of how a well could become contaminated by different land uses and activities.

There are several activities within the Zone Is and IWPAs that pose a potential threat to the water supply. The overall ranking of susceptibility to contamination for the well is high based on at least one high threat activity within the protection areas. Please refer to Table 2.

1. Non-conforming Zone I – Although the water supplier does own the entire Zone I area, there are numerous activities within the Zone I that are non-conforming. The entire school facility including fuel storage, transformers, school building, sewer lines, and parking are within the Zone I of the wells. Systems not meeting DEP Zone I requirements for ownership or control or non-conforming activities within Zone I must receive DEP approval and address Zone I issues prior to increasing water use or modifying systems/facilities.

Zone I Recommendations:

- Prohibit any non-water supply activities within Zone I and, where feasible, remove non-conforming activities within the Zone I areas.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

For More Information:

Contact Catherine V. Skiba in DEP's Springfield Regional Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier and town boards.

- Do not use or store pesticides or fertilizers in Zone I.
- Inspect the wells regularly to ensure the cap is secure, there is no standing water near the well and to ensure that the bulkheads are secure. If the bulkheads cannot be secured, raise the well casing above grade, provide a secure and watertight cap and protect the casings appropriately.
- Relocate the wells if they cannot be secured or if water quality is impaired by activities near the wells.
- Monitor all activities associated with petroleum products within the Zone Is.

2. Underground petroleum storage tanks – There are two, 10,000 gallon fuel oil tanks and one, 1,000 gallon diesel tank UST within the Zone I of Well #2 and within the IWPA of 01G. If managed improperly, fuel oil tanks and their associated piping can be a potential source of contamination due to leaks or spills of the materials they store. The tanks were replaced in the early 1990s.

Recommendation:

- Any modifications to the tank must be accomplished in a manner consistent with Massachusetts's plumbing, building, and fire code requirements. Consult with the local fire department for any additional local code requirements regarding ASTs and USTs.
- Monitor all activities associated with the petroleum products, especially delivery.
- Have spill containment/absorbent materials available on-site

3. School facilities and athletic fields – All of the school's facilities are located within the Zone I and/or IWPA of the wells. Middle schools generally use only household type hazardous materials. Although high school laboratory and photo labs can use potentially harmful materials, the potential threat from disposal of these materials is somewhat minimized because the school is connected to the municipal sewer. There are state and federal regulations controlling some of the activities and products used at schools to promote "healthy schools". Potential also exists for contamination of the wells by onsite use of fertilizers or pesticides on the athletic fields. The shed for lawn maintenance equipment is located outside of the protection areas.

Recommendations:

- Continue the use of Best Management Practices for all activities at the school and at the athletic fields. Consider drought resistant grasses and/or low release nutrient fertilizers in the IWPA, as required.
- Investigate Integrated Pest Management and Best Management Practices within the Zone I and IWPA.
- Use secondary containment as necessary for any petroleum products kept for maintenance and lawn care equipment.
- Use Best Management Practices for handling treatment chemicals and vehicles used to access the area. Do not use or store pesticides or fertilizers within Zone I.
- Review your emergency response plan regarding to accidental releases within the area. Ensure that emergency responders in town are aware of the locations of your resource areas.
- For additional information, refer to the Massachusetts Public Health Association's Healthy Schools website online at http://www.mphaweb.org/pol_schools.html .

4. Transportation corridor/parking – The school's internal transportation corridors and parking are located within the IWPA. Accidents and normal use and maintenance of corridors and parking areas may pose a potential threat to water quality. Catch basins transport stormwater from roadways and adjacent properties to the ground, streams, rivers or reservoir. As flowing stormwater travels, it picks up de-icing materials, petroleum chemicals and other debris on roads and contaminants from streets and lawns. Common potential contaminants in stormwater originate from automotive leaks, automobile maintenance and car washing, accidental spills as well as, waste from wildlife and pets.

Recommendations:

- Prepare an Emergency Response Plan that includes coordination between the emergency responders to be sure they area aware of the location of your well.
- Limit access to the Zone I areas and direct runoff away from the wells.

5. Hazardous Materials Storage and Use – The school utilizes hazardous materials for maintenance and in the laboratories and is a registered generator of hazardous waste and waste oil. Hazardous materials such as paint, thinners, petroleum products, etc. should be kept in containment and used with caution. Cleaning and disposal should not be through the septic system. Spill kits and signs designating areas of storage should be available. If hazardous materials are improperly stored, used, or disposed, they become potential sources of contamination. Hazardous materials should never be allowed to enter a catch basin, or floor drain leading directly to the ground. Review the attached fact sheet for additional information regarding the thresholds for triggering a very small quantity hazardous waste generator.

Hazardous Materials Storage and Use Recommendations:

- Continue current management of hazardous materials on site and consider relocation of the well to minimize any potential threat from an accidental release at the site.
- Continue to use BMPs for fuel oil storage, hazardous material handling, storage, disposal, and emergency response planning.
- Ensure that management plans are up to date and staff review BMPs for the handling of hazardous materials.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will further reduce the wells' susceptibility to contamination. The Department encourages diligence in management of activities near the wells.

Please review and adopt the key recommendations listed above and as follows:

Priority Recommendations:

- Consider relocating the wells to areas remote from petroleum storage and intense activity at the school.

Zone I and IWPA:

- Prohibit any new non-water supply activities from Zone I.
- Conduct regular inspections of the Zone I and IWPA and the wells.
- Post drinking water supply signs in key location such as along the access road and in the parking areas but away from the wells.
- Provide information to staff and pertinent school organizations about the potential hazards of household chemicals, lab chemicals, lawn care chemicals and fertilizers.
- Use Best Management Practices (BMPs) for the use of petroleum products, lawn care products, lab chemicals, pesticides and household hazardous waste.

Training and Facilities Management:

- Incorporate groundwater education into school curriculum (7-12 curricula available; contact DEP for copies).
- Staff should be instructed on the proper disposal of spent chemicals. Include custodial staff, teachers, groundskeepers, and the certified operator.
- Staff should be instructed on the proper disposal of spent household chemicals and or lab chemicals. Include custodial staff, groundskeepers, and the certified operator.
- Manage hazardous materials and waste in accordance with regulation and in a manner protective of the water supplies and public health and safety.

Planning:

- Work with local officials to develop an Aquifer Protection District Bylaw that includes the school wells' IWPAs and to assist you in continued protection of the water supply.
- Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts.

- Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:

The Department's Wellhead Grant Protection Program provides funds to assist public water suppliers in addressing wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". If funds area available, the Department posts a new Request for Response (RFR), grant application form. Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" on the MA DEP website at http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to encourage discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Areas
- Recommended Source Protection Measures Fact Sheet